

Amendment to the Drawings:

The attached sheet of drawings includes changes to FIG. 2B .

Attachment: All drawings

Replacement Sheet

Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

Claims 1-21 are pending in the application and have been rejected. Claims 1, 6 and 13 were objected to. The Office Action objected to claim 12 as being dependent on a rejected base claim but allowable if re-written in independent form including all of the limitation of the base claim. Applicant appreciates the finding of allowability.

Objection to the Drawings

The Office Action objected to the drawings for reasons relating to their form. Therefore, Applicants have amended FIG. 2B and are submitting a replacement sheet and a copy showing the changes. The specification was also amended to correlate the detailed description with the changed drawings. No new matter was added. Claims 6 and 13 were amended to correct antecedent basis.

Rejections under 35 U.S.C. §103.

The Office Action has rejected claims 1-21 under 35 U.S.C. §103 as being unpatentable over Ruigrok et al. (US Patent No. 5,600,297) in view of Ikeda (US Patent No. 6,661,703) or Hiramoto et al. (US Patent No. 6,767,655). Applicant respectfully traverses the rejection for the following reasons.

Claim 1 relates to a magnetic memory cell. Ruigrok relates to a device for detecting a magnetic field; it neither teaches nor suggests the inventions claimed in independent claims 1 and 14, or their dependent claims. Neither Ruigrok, Ikeda, Hiramoto, nor their combination teach or suggest a coupling wherein the first magnetic layer comprises a first magnetization vector and the second magnetic layer comprises a second magnetization vector substantially

parallel to the first magnetization layer in a zero field, and wherein the coupling is strong enough to couple the layers in parallel when they point in easy axis direction and weak enough so that the layers are coupled non-parallel when the layers point in the in-plane hard axis direction. The Office Action contends that Ruigrok teaches the limitations of the claimed coupling at col. 4, lines 4 *et seq.* Applicant respectfully traverses this conclusion. Careful consideration of that section reveals that Ruigrok actually teaches away from the claimed invention. Thus, Ruigrok actually teaches that vectors (M1 and M2) being parallel at zero field conditions is a problem and proposes a solution where vectors M1 and M2 are non-parallel in zero field (see Fig. 6 of Ruigrok) and these vectors are driven to be substantially parallel under a field (see FIG. 7). That is just the opposite of what the claims of the instant patent application require. Ruigrok does not teach or suggest a coupling strong enough to couple the layers in parallel when they point in easy direction and weak enough so that the layers are coupled non-parallel when the layers point in an in-plane hard axis direction.

The Office Action concedes that Ruigrok does not relate to a magnetic memory cell. For purposes of establishing obviousness the Patent Office must consider the claims as a whole. 35 U.S.C. §103(a). In this case, Ruigrok relates to a reader head for detecting a magnetic field. Such reader heads have only one stable state at zero field such that in the absence of a measurable magnetic field the reader has a stable reference point. By contrast, magnetic memory cells must have two stable states – one for each logic state. That makes the Ruigrok structure non-analogous to the claimed invention and its teaching irrelevant. Reader head structures are not suitable for use in magnetic memory cells. The Office Action attempts to ignore the statement in the claims that they relate to magnetic memory cells because that terms appears in

the preamble. That is error. Not only does that approach violate the fundamental statutory principle that claimed subject matter must be considered as a whole but it also ignores a plethora of case law that establishes that the preamble can operate as a limitation where as here it adds life and meaning to the claim. Preamble language will limit the claim if it recites not merely a context in which the invention may be used, but the essence of the invention without which performance of the recited steps is nothing but an academic exercise. Griffin v. Bertina, 285 F.3d 1029, 62 USPQ2d 1431 (Fed. Cir. 2002); Boehringer Ingelheim v. Schering-Plough, (Fed. Cir. 2/21/03); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1350, 48 USPQ2d 1225, 1230-31 (Fed. Cir. 1998). Gauging the effect of preamble language is based on the claim as a whole, see Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620, 34 USPQ2d 1816, 1819-20 (Fed. Cir. 1995). In the instant case, the structure of the claims at issue clearly must relate to magnetic memory cells and the inclusion of the words "magnetic memory cell" was not a mere intended field of use.

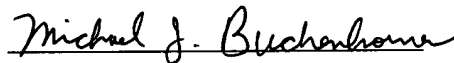
The combination of Ruigrok with Ikeda and/or Hiramoto does no better than Ruigrok to establish the obviousness of claims 1 or 14 as amended, or their dependent claims. Contrary to the contention of the Office Action, Ikeda, col. 2, 2, lines 1-50 does not teach or suggest the coupling specified in the amended claims 1 and 14. Ikeda discusses different structures and perpendicular magnetic fields, not the parallel and non-parallel couplings of the magnetic memory cell claims by Applicants. Magnetic memory cells using perpendicular magnetic fields (as Ikeda) are substantially different from those claimed in the instant application wherein the layers comprise magnetic vectors lying in planes parallel to the surfaces of the first and second layers. This is clear from the amended language that finds support in the written description at

paragraph 8 where the specification discusses magnetization pointing right or left (i.e., in the plane of the layers) and mathematics at page 10 of the specification [paragraphs 32-34] clearly relate to vectors that are coplanar with the magnetic layers.

Claims 2-5 and 7-13 are either directly or indirectly dependent on claim 1 and are patentable for at least the same reasons that claim 1 is patentable. Claim 14 is a method claim that also comprises the limitations of the "wherein" clause of claim 1 and therefore it and its dependent claims are patentable for the foregoing reasons.

For the foregoing reasons, Applicant respectfully requests allowance of the pending claims and that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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I hereby certify that this Amendment and Response to Office Action, and any documents referred to as attached therein are being deposited with the United States Postal Service as First Class Mail on this date to the Commissioner for Patents, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450.



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Annotated Sheet Showing Changes
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FIG. 1C

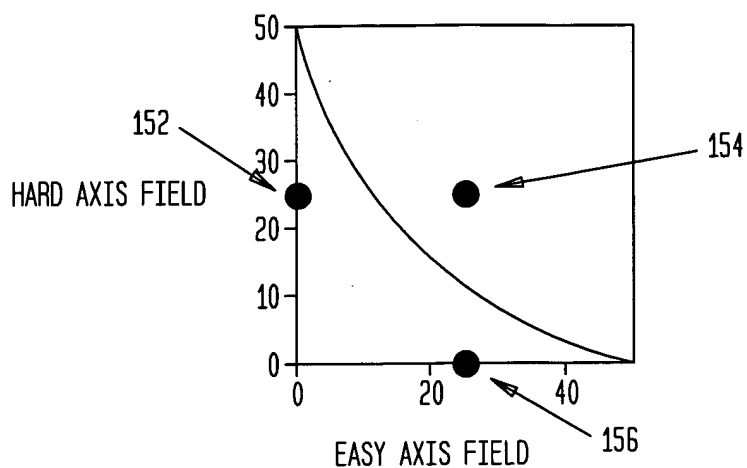


FIG. 2A

TOP VIEW:

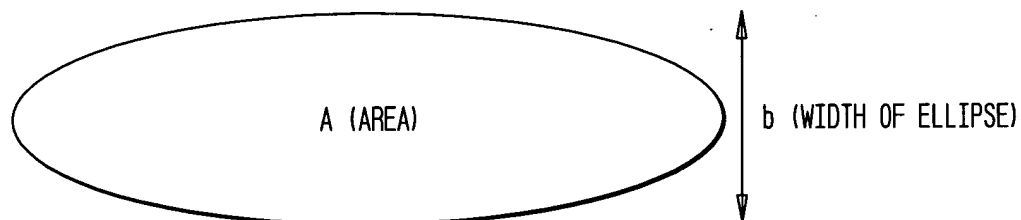


FIG. 2B

cross-hatching
added

SIDE VIEW:

